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EDITORIAL COMMENT

Minimal Amount of Exercise to Prolong Life

To Walk, to Run, or Just Mix It Up?*

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In order for man to succeed in life, God provided two means, education and physical activity. Lack of activity destroys the good condition of every human being, while movement and methodical physical exercise can save it and preserve it.

—Plato 400 B.C. (1,2)

For man to assume great responsibility, God tested his mental commitment, labored his muscles and bones, and starved his body.

—Mencius 300 B.C. (3)

Most agree that physical activity is beneficial, but a large proportion of the global population, ranging from 40% to 80%, remains sedentary. Surveys in the United States (4) and the United Kingdom (5) showed that more than half of all adults failed to comply with the 2008 Physical Activity Guidelines for Americans (6), which recommends 30 min/day of moderate-intensity exercise or 75 min/week of vigorous-intensity exercise. The situation is worse in Asian countries, where up to 80% do not meet the guidelines (7). Although such low compliance with physical activity guidelines could be due to unawareness of the strong benefits of exercise, it is also possible that the standard is perceived as being too high, which could deter many people from even trying. Instead, establishing goals that can be attained with minimal effort becomes important.

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In this issue of the *Journal*, Lee et al. (8) found that minimal running of 5 to 10 min/day was associated with reduced mortality from all-cause (30%) and cardiovascular disease (45%) and could add 3 years of life expectancy from a 15-year follow-up of 55,137 adults at the Cooper Clinic in Dallas, Texas. This study found that running, even less than the recommended amount of time or at slower speeds, was associated with significant benefits. This minimal amount, half of that recommended in the guideline, is similar to the 15 min/day of brisk walking reported in the *Lancet* in 2011 by Wen et al. (7), one-half of the currently recommended 150 min/week, or 30 min/day. Both showed a 3-year extension of life expectancy, and both are good news to the sedentary because finding 5 to 15 min per day to exercise is much easier than finding 30 min. Prior to these 2 studies, no conclusive timeline had been identified with sufficient statistical power to show definitive health benefits (7).

Runners in this study were usually more motivated and had fewer risk factors such as smoking or obesity. In contrast, nonrunners had more comorbidities, such as diabetes or hypertension. Like most observational studies, the causality associated with their conclusion is not clear. However, the results of Lee et al. (8) are consistent with findings from prospective randomized trials in secondary cardiovascular prevention that have shown a clear mortality benefit from regular exercise (9). In this study, the researchers used statistical methods to control for confounders and performed sensitivity analyses

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examining different groups of people, and they found consistent results. As such, the direct health benefits of exercise are irrefutable. The reality is that a virtuous cycle exists for an iterative process of incremental exercise promoting incremental health, and the healthier individuals in turn being more likely to exercise, blurring the simple cause-and-effect relationship.

Many studies have shown that higher-intensity exercise yields more favorable effects on mortality and disease risk than lower-intensity exercise (10). The benefits of running were superior to walking not only at the same volume but also at lower volumes than walking (7). Running beats walking by a factor of 2:1 to 4:1, in terms of mortality reduction at iso-volume. As shown in **Figure 1**, a 5-min run is as good as 15-min walk, and a 25-min run can generate benefits that would require 4 times longer to accomplish by walking. As the researchers indicated, for younger individuals who are pressed for time, running is a far better option for time efficiency.

The huge advantages of running, however, come with a hefty cost to the body and habit formation. To the body, persistent running is invariably associated with injuries (11), even among leisure-time runners. One study reported that 1 in 4 (25.9%) experienced injuries that were significant enough to restrict running in an 8-week practice run of 4 miles (12). Even experienced runners with good preparation could not avoid injuries. However, for the suggested minimal running like 5 to 10 min/day, injuries can be minimized or sharply curtailed. For habit formation, running requires a much bigger commitment than walking. For beginners, running can be painful, laborious, and difficult to sustain. Lee et al. (8) suggested a "progressive transitional phase" by the inactive to start walking before running. It is obvious that the aforementioned health benefits cannot be achieved when an injured individual has to quit running. On the other hand, the concern for sudden death from running is so miniscule that the risk could be ignored—reported as 4 per 1 million (13) compared with an average coronary heart risk of 20% to 30% in the lifetime of an inactive individual.

Walking has advantages of being much easier to perform and conducive to social networking. The most important advantage of walking, however, is its high safety factor that can be sustained for months or years. Our exercise recommendation prior to the 1990s was rooted in the "athletic" paradigm and stressed vigorous activity. After that, the fitness-target approach was augmented by a more inclusive population-based health-target approach, which gave credence to the benefits of moderate-intensity activity or walking (14). The choice between walking and running is simple if identical health benefits are achieved by walking, which is easier to sustain, particularly for the majority of the population who are sedentary. Alternatively, walking mixed with jogging could be recommended for those who are young and vibrant and find walking too time consuming.

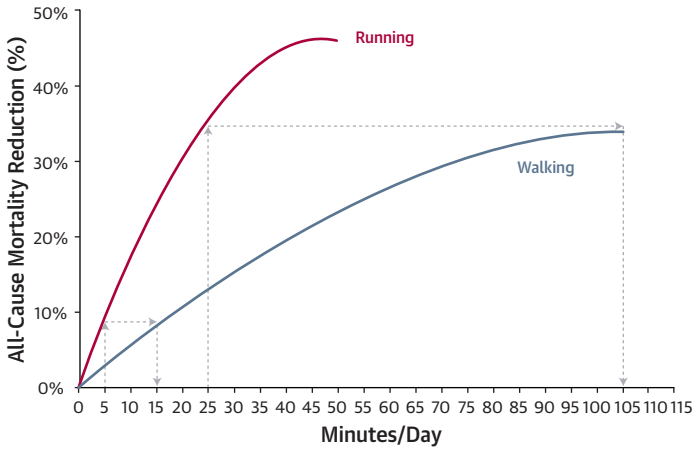

FIGURE 1 Comparison of Benefits Between Walking and Running

A 5-min run generates the same benefits as a 15-min walk, and a 25-min run is equivalent to a 105-min walk.

Physicians are faced with a similar dilemma to counsel apparently "healthy patients" about how to exercise. Patients expect an "exercise prescription" from their doctors. Although devising a customized exercise prescription for each patient may sound complicated, 15 min of brisk walking or 5 min of running is all it takes for most clinic patients. Exercise is a miracle drug in many ways. The list of diseases that exercise can prevent, delay, modify progression of, or improve outcomes for is longer than we currently realize. The study by Lee et al. (8) showed a staggering reduction of 45% for cardiovascular disease from 5-min to 10-min runs per day. Even 15 min of brisk walking reduced mortality from ischemic heart disease by 25% (7). Also, it is important to promote exercise by stressing the potential harm of inactivity (15). Warn patients that inactivity can lead to a 25% increase in heart disease and a 45% increase in cardiovascular disease mortality, not to mention a 10% increase in the incidence of cancer, diabetes (7), and untold depression. Although most patients are aware of the benefits of exercise, it is up to us to move them from wishful thinking to a practical reality and

move them from contemplation to the action phase (16). Even with 1-min counseling, it is our attitude and our commitment toward emphasizing the importance of exercise or the harm of inactivity that may move patients. A simple message, delivered with sincerity, needs to be repeated every time we encounter our patients.

As doctors, we should "walk the talk," spending at least 15 min/day in dedicated exercise, while also advocating building a culture of physical activity around us. We do not need to be athletes to exercise—it should be part of all of our daily routines.

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